Experiences in Software

For Your Commodore 16 And Plus/4

commodore COMPUTERS

Experiences in Software

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INTRODUCTION

The programs in this package are designed to demonstrate some of the features and capabilities of your computer. In running the programs, you'll experience the graphics and sound, as well as other applications for your computer system. There are programs for demonstration, entertainment, design and home usage, all for use with your Commodore 16 or Plus/4 computer. You'll need a Commodore cassette tape player and a television or monitor, along with your computer to run the programs in this package. Some of the programs contain options for use with a printer, but if you don't have one, don't worry it's not required to run any of the programs on the tapes.

The programs in EXPERIENCES IN SOFTWARE are contained on two tape cassettes. Below are the names and order of the programs. In case of damage and for your convenience, each program has been recorded twice on the same side of the tape.

TAPE ONE	TAPE TWO
SIDE A CIRCLES	SIDE C HIGH RESOLUTION GRAPHICS
1000 MILES INSTRUCTIONS	COLOR CALIBRATE
1000 MILES	CALENDAR
SIDE B PLANETS	SIDE D COLOR TEST
SOUNDS	FREE ETCH
TAPE-DISK	PRINT UTILITY.PLUS/4
MAKE ME A LIST	PRINT UTILITY.C16

CIRCLES

To LOAD this program, rewind side A of tape 1 and type:

LOAD "CIRCLES" ⟨RETURN⟩

Once loaded, enter **RUN ⟨RETURN⟩** .

CIRCLES demonstrates the effect of changing the luminance levels of colors while they are being displayed on the screen. The image appears to be expanding when, in fact, it's not moving at all. This program contains REM statements, so you can LIST it and see what each statement actually does. This can help you to create your own graphic programs.

1000 MILES

The instructions for this computerized version of the French board game (Mille Bournes) are in program form on Tape 1, side A. To LOAD the instructions, type:

LOAD "1000 MILES INSTR" ⟨RETURN⟩

After loading, enter **RUN ⟨RETURN⟩ .**

Once the game instructions have all been displayed on the screen, the computer gives you instructions for LOADing the actual game. To LOAD the game directly, type:

LOAD "1000 MILES" ⟨RETURN⟩

The object of this auto racing game is to be the first player to travel exactly 1000 miles. You play against the computer and each game lasts for five rounds of play. You are dealt six cards (numbered 1-6) which are displayed on the screen at all times. When it is your turn, the computer deals you another card. You can either PLAY a card or DISCARD a card. Do this by typing the first letter of the command followed by the card number. For example, if you want to PLAY card number 4, type P4 and press RETURN.

When there are no more cards in the deck, you must play or discard the remaining cards in your hand. If neither you nor the computer reaches 1000 miles in a round, the computer will tell you so and begin a new round.

Points are awarded as follows:

1 point for each mile traveled
100 points for each SAFETY card used
300 points for each COUP FOUREE
400 points for reaching 1000 miles (completed trip)
500 points for shutting out your opponent.

PLANETS

To LOAD this program, rewind side B of tape 1 and type:

LOAD "PLANETS" RETURN

Once loaded, enter **RUN ⟨RETURN⟩ .**

PLANETS demonstrates the 3D graphics capabilities of your computer. When you have finished viewing the image on your screen, press the ESC key to exit the program. This program has been commented with REM statements, so you can LIST the program and see what each statement actually does. This can aid you in creating your own programs.

SOUNDS

To LOAD this program, type:

LOAD "SOUNDS" ⟨RETURN⟩ .

SOUNDS displays a menu of seven sound effects (labeled a-g) available on your computer. To hear an effect, press its corresponding letter—make sure the volume on your monitor or television is turned up. Press the RUN/STOP key to exit from the program. The sounds program is commented with REM statements, so you can LIST it and see how to generate sounds on your own.

TAPE-DISK

To LOAD this program, type:

LOAD "TAPE" ⟨RETURN⟩ .

After loading, type **RUN ⟨RETURN⟩ .**

TAPE-DISK allows you to copy a file (program or sequential) from a cassette tape to a floppy diskette, or vice-versa. When you run the program, the computer asks you which option you wish to use and then prompts you for the information it requires to perform the task. When the copy has been completed, the program asks you if you wish to make another copy. If you wish to exit the program, just enter 'N' (for no) and your computer goes back to BASIC.

MAKE ME A LIST

This program is a list creator. Each line of your list is referred to as an item. Every item can contain up to 10 sections, called fields.

To LOAD this program, enter:

LOAD "LIST" ⟨RETURN⟩ .

Once loaded, enter: **RUN ⟨RETURN⟩ .**

The first screen is a menu of options. The options are listed and explained below.

A- Add items

This starts a new list (file) or adds to an existing list. If it is a new file, you are asked for the number of fields making up the item. After you have indicated the number of fields, you can start typing your list. Separate each field with a ";". Press RETURN after each item is entered to the list.

E- Edit items
This allows you to edit any item in the list. First, it asks which item number you wish to edit. After it is entered, the item is displayed. Make your corrections and press RETURN. If you edit an item in a list that has already been saved, the list must be saved again under a new name to store the corrected list.

D- Delete items
Enter the item number you wish to delete and press RETURN. If you don't enter an item number and press RETURN, nothing is deleted. You then return to the main menu.

R- Review list
This option lists your items either to the screen or the printer. If the printer option is on, the list is printed. (see P).

T- Total fields
Totals numeric data and displays the total for each field.

O- Sort items
This option allows you to sort by a field in ascending or descending order. The field can be sorted by numeric or alphabetic characters.

P- Printer: OFF
This option is a switch that turns the printer on or off. If the printer is switched to on, then the list is printed by pressing R (Review).

S- Save file
This option saves your list. It asks if you are saving to Disk or Tape and for the filename.

L- Load file
This option allows you to load your list from tape or disk.

Q- Quit program
This exits the program to BASIC.

HIGH RESOLUTION GRAPHICS

To LOAD this program, rewind side C of tape 2 and type:

LOAD "HIRES GRAPHICS" ⟨RETURN⟩ .

This program displays a high-resolution sine wave in 3D on your screen. When you have finished viewing the image, press any key to exit from the program. This program also contains REM statements, so you can LIST it and see what each statement does.

COLOR CALIBRATE

To LOAD this program, type:

LOAD "COLOR CALIBRATE" 〈RETURN〉

COLOR CALIBRATE allows you to adjust the luminance levels for each of the 15 colors on your machine (black is not used in this program) by using the cursor control keys. Use the CURSOR DOWN/UP key(s) to change the luminance level of the color above the large arrow on the screen. Use the CURSOR RIGHT/LEFT key(s) to move the arrow to another color. It's a good idea to note which luminance levels you prefer with each color for later use. To exit this program, press the RUN/STOP key and then clear the screen by pressing the SHIFT and CLEAR/HOME keys at the same time. This program also contains REM statements, to help you learn BASIC programming. After loading COLOR CALIBRATE, type LIST to list the program.

CALENDAR

The CALENDAR program allows you to:

- Produce a calendar for any month of any year later than 1752 (the date Great Britain and the American Colonies adopted the Gregorian calendar).
- Determine the day of the week for any date.
- Calculate the days between two dates.
- Calculate a date, in the future or past, based on the number of days, weeks, months or years from a specified date.
- Calculate Julian dates from Gregorian or vice versa.

The Gregorian calendar is the calendar in general use today. It was introduced in 1582 by Pope Gregory XIII and adopted by Great Britain and the American Colonies in 1752.

You can also refer to a day as a number between 1 and 366. This is called the Julian date. The Julian calendar, introduced in Rome in 46 B.C., established the 12-month year of 365 days. Every fourth year has 366 days. The months have 30 or 31 days except for February which has 28 days, or in leap year, 29.

To LOAD this program, enter:

LOAD "CALENDAR",8 ⟨RUN⟩ RETURN

Once loaded, enter: **RUN ⟨RETURN⟩ .**

The first screen that appears in the calendar is an entry screen. This is where you enter the dates used in the calculations.

During entry of the dates, the following keys are used for editing:

Cursor Down-Move to next area
Cursor Up-Move to previous area
Home-Move to first field
Shift Clr-Erase all entries
Delete-Delete character
F1-Execute calculations
M-Display calendar for DATE ONE
HELP-Display help messages
RETURN-Next Area
ESC-Return to BASIC

Enter Gregorian dates as Month, Day and Year, the Julian entry is just the day (1-366). If you have a question about what you should enter in a field, move your cursor to that area and press the HELP key. The HELP messages are displayed across the bottom of the screen.

1. To determine the day of the week for a date and/or calculate the Julian day for a particular date:
   Enter the month, day and year under DATE ONE and press F1. The calculation is performed and then displayed on the screen.
2. To calculate the number of days and years between two dates: Enter the first date under DATE ONE. Press Cursor Down until the cursor is in DATE TWO. Now enter the second date and press F1. The number of days and years are displayed at the lower right of the screen.
3. To calculate a date, in the future or past, based on the number of days, weeks, months or years from a specified date: Enter the starting date in DATE ONE. Press Cursor Down until the cursor is at TYPE +,—. Enter the direction of the second date (+ for future, — for past). Then enter the amount of time, in days, weeks, months or years, you want between the first date and the second date. Now press F1. The computed date is displayed as DATE TWO.
4. To calculate a Gregorian date from a Julian date, enter the Gregorian year and the Julian day. Pressing F1 gives you the Gregorian month and day with the day of the week. Julian dates are calculated automatically by inputting a Gregorian date, then pressing F1.

5. To display a month: Enter the month, any day within that month, and the year under DATE ONE. Press F1. Then to display the month press M. Next, the screen prompts: PRINT A CALENDAR?. Typing Y (RETURN) prints the month on your printer. N (RETURN) displays the calendar on the screen.

COLOR TEST

To LOAD this program, rewind side D of tape 2 and type:

LOAD "COLOR TEST" ⟨RETURN⟩

COLOR TEST displays the 15 colors available on your computer (black is not used in this program) in each of their eight luminance levels. You can adjust the color, tint, bright or contrast knobs on your television or monitor while this display is on your screen. Press the ESC key to exit the program.

FREE ETCH

FREE ETCH is a graphics package that turns your monitor into an artist's canvas. You can draw freehand, draw shapes, and fill and erase areas of the screen. You can select from 16 colors, and choose the exact shade you want out of any of the eight luminacne (brightness) levels for each color. You need a joystick to use Free Etch, plugged into control port #0.

To LOAD the program enter:

LOAD "FREE ETCH" ⟨RETURN⟩

Type RUN after the program has been loaded. The canvas screen appears, which has a command menu at the bottom, and a blue and white pattern over the rest. Press the SHIFT key and the CLR/HOME key together to erase the blue and white pattern.

COMMANDS:

The commands for Free Etch are listed at the bottom of the screen. The Free Etch commands can be selected by typing in the number or letter of the command, and pressing RETURN. To activate the command, press the fire button on your joystick. You can tell if a command is active because the command name changes color from black on the command menu. When a command is active, you can't perform any other activity. To exit from a particular command, press the SPACE BAR.

1. DRAW	6. FILL	B) ERASE
2. LINE	7. SOURCE	C) SCREEN
3. SQUARE	8. COLOR 1	
4. CIRCLE	9. COLOR 2	
5. CENTER	A)COLOR 3	

CHOOSING COLORS

Free Etch lets you select three colors to be used at any time. The SOURCE (command 7) lets you choose which color is currently in use. To select colors, press the command number.

For example, to choose COLOR 1, press 8. To see each color available, repeat pressing "8". Each time you press 8, the command in the listing changes to a new color.

To change the shade of the colors, press the + or — keys. You can set the shade by repeated pressing. To complete color selection, press the SPACE BAR. You can change colors even after you select a color.

If you want to keep the colors you've selected for colors 2 and 3, you can change color 1 in the same fashion you used to select it.

Once you've chosen your three colors, type "7" to select which color to use. Repeat pressing the 7 key to go from COLOR 1 to COLOR 2 to COLOR 3. The word "SOURCE" changes to the appropriate color and the source number reads 1, 2 or 3 when you press "7". Pressing the SPACE BAR completes the SOURCE choice.

When you draw or create circles, lines and squares, they appear in the color you select to be the SOURCE. Then, when you fill in shapes or areas of the screen, the SOURCE specifies which color is to be used.

CREATING YOUR PICTURE

There is a tiny dot cursor you move to carry out your commands. Sometimes this cursor is hard to locate. When you choose option 5 (CENTER), the cursor automatically is moved to the center of the screen.

The first four commands are what you'll use to draw your masterpieces. To select any of these commands, press the number. The color of the command in the list at the bottom of the screen changes to light blue. This is the signal that you can utilize that particular command.

To DRAW, hold down the fire button and move the joystick. This creates a colored line (of whatever source color you select) that you can manipulate any way you wish. You can move the dot cursor, without drawing a line, by moving the joystick without holding down fire button. As with all commands, press the SPACE BAR to return to the menu.

To draw a LINE, select option #2. Move the cursor (with your joystick) to the point where you want the line to start and press the fire button. The command in the menu turns pink, signaling that the first point has been entered correctly. Then position the cursor at the point you want the line to end and press the fire button. The line is drawn automatically. Don't press the fire button with too much force or for too long a time, because your computer might perceive it as two separate entries.

Use the SQUARE command to create boxes and rectangles. Move the cursor to a starting point and press the fire button. Then move the cursor to the opposite diagonal corner of the box. For example, if your first point was the lower-right corner, go to where you want the upper-left corner and press the fire button. Again, the command name in the menu changes color when you press the fire button.

The CIRCLE command works in the same fashion as the square command, except that the first point you press the fire button is the center of the circle and the second point is the outer edge. In effect, you are creating a line that is the radius of the circle.

SCREEN EDITING

There are three commands available for screen editing: FILL (6), ERASE (B) and SCREEN (D). Using these commands, you can color in areas, clear certain areas and view the entire screen without the menu.

When using the FILL command, make sure you have chosen the right color you want to fill in the area with, checking the SOURCE color. To FILL any area, select "6", and press the fire button. The area around the cursor is colored in the SOURCE color, out to whatever boundaries surround the cursor.

If you have the cursor positioned inside a circle, the entire circle is filled in. If you have the cursor positioned outside a circle, everything outside a closed boundary is filled in. The circle would remain unfilled.

Be careful when filling in shapes you've drawn; if a shape's outline is not completely closed, you either will fill in everything outside the shape or inside the shape, if your cursor is positioned outside. Once you FILL an area with color, you cannot color over that area using the FILL command. You must either use DRAW or do an ERASE.

The ERASE command "B" works like the SQUARE command, except that everything located inside the block you define, by pressing the fire button twice, is erased. Anything that was drawn in that area, filled or unfilled, is removed from the screen.

The SCREEN command removes the menu from the bottom of the screen, which gives you more space to draw. Press "C" and you have the full screen at your disposal. If you need the menu back, press the SPACE BAR and you have the restricted screen again. Whatever is drawn underneath the menu, even though you can't see it, is still there.

PRINT UTILITY. PLUS/4 & PRINT UTILITY.C16

Print utility programs are slightly more advanced than the others in this package. They are used to output information to a printer while the screen is in use. You can output whatever is on the screen at the time, or a list of variables (and their current values) that have been defined in a BASIC program.

The program routines are written in assembler language and must be LOADed in with a BASIC driver routine. The BASIC driver displays messages informing you of your options at any time during the run of the program. When you have finished with this program, it is a good idea to use the reset button on your computer to clear its memory of the utility routines.

LOAD the driver program, by typing:

If you own a Commodore Plus/4 computer,

LOAD "PRINT.PLUS4" ⟨RETURN⟩

C 16 owners should type:

LOAD "PRINT.C16" ⟨RETURN⟩

No special programming knowledge is required to use these utilities. The BASIC comand "LOAD" is used to bring the utility module into memory. After the utility has been loaded, type RUN. The computer asks if you want to use the print screen or print variable function. If the answer to both prompts is "NO", then no further action is taken. Otherwise, messages are displayed on the screen, telling you how to enable/disable or invoke either or both of the print utilties.

The program displays messages giving the values for all the SYS and POKE commands available to the user. Then the utility programs are moved into the memory area they will operate from. Operating system pointers to top and bottom of BASIC memory space are automatically updated as necessary to "protect" the utilities from the BASIC program you use with it. These utilities require specific areas of memory (top of BASIC for C16, bottom of BASIC for the Plus/4) to operate from. These utilities should be the first programs loaded and they cannot operate with other programs which conflict with their memory use.

SCREEN-PRINT FUNCTION

The Screen-Print portion of the utility provides printer output on any text screen display. The screen-print can be enabled or disabled by using the SYS command listed by the program on the first screen directly by keyboard, or in a BASIC program you write. When enabled, pressing both the SHIFT and CTRL keys together briefly causes printing of the current screen display. The screen display is not disturbed by the print utility and execution of any BASIC program is resumed when printing is done.

VARIABLE-PRINT FUNCTION

The Variable-Print portion of the utility provides screen or printer output of the names and values of all scalar (non-array) variables that have been defined during execution of a BASIC program. The variable print is enabled by using the SYS command, either in a BASIC program or from the keyboard directly. The name of each variable, an equals (=) sign, and its current value are printed in the order that the variables were defined by the BASIC program.

Both of the print utilities provide for all of the OPEN, CLOSE and error-checking functions needed for printer output. For both utilities, a default logical file number equal to 127 and a default device number equal to 4 are used for printing. These may be changed by using the POKE command to place new values in memory. The same file-number and device-number values will be used by both utlities. The screen-print will substitute a device number equal to 4 in place of device number 3 (the screen). The only user caution is that any program currently running must not be using the same logical file-number as the print utilities.

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T112004

Printed in U.S.A.